

REMARKS

Claim Status

Claims 1-42 are pending in the application. This paper amends claims 1, 6, 8, 15, 16, 19, 25, 27, 34, 35, and 38. Claims 1, 19, and 38 are the independent claims of the application.

Interview Summary

Applicants and the undersigned attorney thank Examiner Knoll and Examiner Perveen for granting the telephonic interview that took place on September 22, 2005, and the courtesies extended to the Applicants' attorney during the interview. No exhibits were shown and no demonstrations were conducted during the interview. Claims 1-42 were discussed. The prior art references discussed included (1) Carey, U.S. Patent Number 6,460,174 ("Carey" hereinafter); and (2) Hochschild *et al.*, U.S. Patent Number 5,546,391 ("Hochschild" hereinafter). Specific proposed amendments were not discussed. Agreement was not reached.

Art Rejections

The Office Action rejected claims 1-3, 15, 16, 19-21, 34, 35, 38, and 39 under 35 U.S.C. § 102(e) as being anticipated by Carey. The Office Action also rejected claims 4-14, 22-33, and 40-42

under 35 U.S.C. § 103(a) as being unpatentable over Carey in view of Hochschild. The Office Action further rejected claims 17, 18, 36, and 37 under 35 U.S.C. § 103(a) as being unpatentable over Carey in view of Adams *et al.*, U.S. Patent Publication Number 2001/0042147 (“Adams” hereinafter). Applicants request reconsideration of the rejections based on the amendments above and the following arguments.

Claims 1, 19, and 38

Each of the independent claims 1, 19, and 38 has now been amended to recite that a first on-chip component of the plurality of on-chip components and a second on-chip component of the plurality of on-chip components are coupled to the on-chip communication bus through one of the stations. Similar limitations were formerly recited in dependent claims 15 and 34.

In rejecting claims 15 and 34, the Office Action states that Carey discloses, in column 2, lines 36-39, two components coupled to the bus through one of the stations. Here is the cited portion of Carey:

A number of modules 6 are connected to the distributed routing network 4. Any number of modules can be connected to the routing network 4. The modules can be of any form. For example the modules may include one or more of the following modules: CPU; external memory interface; debug module; external interface circuitry; and the like.

Carey, col. 2, lines 34-39. While the paragraph quoted immediately above does teach a number of modules 6 being connected to the distributed network, it is plainly silent on multiple modules 6

being connected through one station. Indeed, Figure 1, which the paragraph describes, shows each module 6 being separately connected to the routing network 4.

Carey's cited text does not teach more than a single component being connected to the bus using the same station, *i.e.*, using the same port to the bus.¹ For this reason, Carey does not disclose an identical invention and fails to anticipate independent claims 1, 19, and 38, as amended.

Claims 3 and 21

In the system of claim 3 and in the method of claim 21, the on-chip components include a PCI bridge, a USB component, or an inter-integrated-circuit component. According to one definition, an inter-integrated-circuit or I2C is

a type of bus designed by Philips Semiconductors in the early 1980s, which is used to connect integrated circuits (ICs). I2C is a multi-master bus, which means that multiple chips can be connected to the same bus and each one can act as a master by initiating a data transfer. I2C is used in many devices, especially video devices such as computer monitors, televisions and VCRs.

Webopedia computer dictionary, available at <http://www.webopedia.com> (internal underlining and italicizing omitted). The Examiner has accepted this definition of inter-integrated-circuit. See Office action mailed on July 2, 2004, page 8.

The Office Action states that Carey teaches an inter-integrated-circuit component at col. 2, lines 36-39. The text in question reads thus: "The modules can be of any form. For example the

¹ The present application defines a station as a "port to an on-chip communication bus according to the invention," at

modules may include one or more of the following modules: CPU; external memory interface; debug module; external interface circuitry; and the like.” Carey, col. 2, lines 36-39. Although the cited portion does not affirmatively exclude the use of an inter-integrated-circuit component, it apparently does not disclose its use. It also appears that Carey’s text quoted above teaches neither a USB component nor a PCI bridge. In other words, it appears that Carey does not teach any of the three modules claimed in the alternative. At least for this reason, Carey does not anticipate claims 3 and 21.

Claims 4 and 40

Claim 4 recites “an arbiter that evaluates requests from other stations and selects a track on which to receive incoming data” being included in each station. Claim 40 recites “an arbiter circuit capable of receiving a request signal and granting permission to a station that originated the request signal to send information to the station that granted permission over the dedicated track of the station that originated the request signal” being included in each station. The Office Action acknowledged that Carey does not expressly disclose “the particular arrangement of an arbitration specifically located at each station.” The Office Action then sought to combine Carey with Hochschild, which purportedly discloses an arbiter located at each station, and that evaluates requests from other stations and selects a track on which to receive incoming data. The Office Action asserted that the modification would have been obvious “because Hochschild shows an

express means to effectively arbitrate requests from other stations and select a track, which feature provides Carey with an effective means of expressly providing the arbitration in the case in which Carey uses dedicated tracks for the sending of information.” This motivation is insufficient to establish a *prima facie* case of obviousness.

The Office Action apparently implies that Carey’s system does not possess a “means to effectively arbitrate requests from other stations and select a track”; otherwise, a person skilled in the art would not have seen a reason to modify Carey’s system by changing its arbitration method. The Office Action does not explain in what way Carey’s central arbiters – which Carey expressly discloses – are ineffective or otherwise undesirable. Carey’s disclosure and other art of record here apparently do not suggest that Carey’s arbitration method is somehow deficient in comparison to the Hochschild arbitration method.

In sum, the Office Action simply cites different features of the claimed invention from different prior art references without explaining the motivation to combine or modify the prior art references. This is insufficient because “[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992).

Furthermore, even if advantages of the arbitration scheme disclosed in Hochschild were listed in the Office Action, such advantages would have to be weighed against known disadvantages of Hochschild’s arbitration method. As the Court of Appeals for the Federal Circuit phrased this principle, “[t]rade-offs often concern what is feasible, not what is, on balance, desirable. Motivation

to combine requires the latter.” *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 53 U.S.P.Q.2d 1580, 2000 U.S. App. LEXIS 1008, *28 (Fed. Cir.), *cert. denied*, 530 U.S. 1238 (2000). Although the fact that the motivating benefit comes at the expense of another benefit does not by itself nullify its use as a basis to modify the disclosure of one reference with the teachings of another, the benefits, both lost and gained, should be weighed against one another. *Id.*, note 8. The *Winner* opinion suggests that the required motivation to combine references to teach a feature that involves a trade-off with another feature, must also show that the feature to be substituted is desirable in terms of the combination urged, not merely feasible.

The Office Action merely states that Hochschild’s arbitration would provide Carey with an “effective means of expressly providing arbitration,” without explaining why Carey’s arbiters are “ineffective,” and without balancing of the advantages and disadvantages of Hochschild’s arbitration method versus Carey’s arbitration method. For these reasons, the Office Action has not made out a *prima facie* case of obviousness of claims 4 and 40. Applicants respectfully submit that dependent claims 4 and 40 are separately patentable over Carey and Hochschild.

Claims 6, 8, 16, 25, 27, and 35

According to claims 6 and 25, the grant multiplexor comprises plural smaller multiplexors distributed across the chip. According to claims 8 and 27, the track multiplexor comprises plural smaller multiplexors distributed across the chip. In rejecting these claims, the Office Action cited

Carey's teaching of "more requests" in column 2, lines 53-54. The pertinent portion of Carey is quoted below:

The central control logic arbitrates between the requests of the initiator ports 8 to determine which one or more requests are allowed onto the distributed routing network at a given time (for example a given cycle). A similar arbitration function may be provided for the responses of the target ports.

Carey, col. 2, lines 52-57. In this text we discern no teaching or suggestion of a multiplexor that comprises plural smaller multiplexors distributed across the chip. To the contrary, Carey expressly states that the arbitration logic is central. The "more requests" expression appears to refer to the requests of multiple initiator ports. Such request are not inherently connected to plural smaller multiplexors that make up a larger multiplexor. Further, it appears that Carey does not disclose grant or track multiplexor comprising plural smaller multiplexors distributed across the chip to facilitate scalability, as is recited in the amended claims 6, 8, 25, and 27.

At least for this reason, Applicants respectfully submit that claims 6, 8, 25, and 27 are patentable over the combination of Carey and Hochschild.

Amended claims 16 and 35 recite multiplexors that comprise smaller multiplexors distributed across the chip in stages to facilitate scalability. These claims should be patentable over Carey and Hochschild for the same reason as claims 6, 8, 25, and 27.

Remaining Dependent claims

The above discussion addresses patentability of all independent claims and of several dependent claims of the application. As regards the dependent claims not specifically discussed, these claims should be patentable together with their base claims and intervening claims, if any.

CONCLUSION

For the foregoing reasons, Applicants respectfully submit that all pending claims are patentable over references of record. To discuss any matter pertaining to the present application, the Examiner is invited to call the undersigned attorney at (858) 720-9431.

Having made an effort to bring the application in condition for allowance, a timely notice to this effect is earnestly solicited.

Respectfully submitted,

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